
Bilkent University

Department of Computer Engineering

# CS 353

# Database Management Systems Project

## Project Proposal

## Football Database System

06.03.2017

Section 2 / Group 11

- Buğra Felekoğlu — 21301200
- Burak Gök — 21302025
- Umut Mücahit Köksaldı — 21402234
- Barış Poyraz — 21401952

Instructor

- Özgür Ulusoy

# Table of Contents

# 1. INTRODUCTION

This report is about our project proposal of a Football Database System which explains the basic functionalities and extent of our project. Within this report, the aim of the project, the basic functions, the limitations and restrictions, how the project will be designed and how the database system is going to be integrated into the project is discussed.

The report starts with Project Description part in which the scope and the properties of the Football Database System is explained. It continues with the questions of why we need a database and how we can use a database as part of this Football Database System project.

The report continues with the requirements. As part of the requirements, functional requirements, nonfunctional requirements, pseudo requirements are explained. Functional requirements are essential to establish the functionalities, the scope and the properties of the project. The functional requirements are clarified by analyzing the user ends, their permissions and capabilities in the system. In nonfunctional requirements, we provided authentication & security, performance, reliability and usability goals for the system. In pseudo requirements part, we listed the technologies that we will be using as part of the project. In the limitations part, we provided the boundaries and constraints of the system.

After defining project requirements, at the end we provided the E/R diagram that will be used as the basis of our database design. E/R diagram is tried to be designed so that the requirements and functionalities of our system are satisfied.

# 2. PROJECT DESCRIPTION

Football Database System is a web-based application for managing and observing a football league, designed to be used by football fans, club directors, agents and players alike. The system includes information about the club rosters, club budgets, information about players and their agents, club directors, coaches, player injuries and transfers, current club standings in the league, information about the played games and football stadiums. With this data, the fans are able to follow the teams they are supporting. They can search for players, clubs, club staff such as coaches or club directors, matches, and gain access to detailed information about each of these elements. In addition, the club directors can make transfer

offers to players on other teams, as well as setting a transfer fee for their own club's players and putting them on a transfer list. Player's agents can oversee the transfers using the system by setting a wage demand for each transfer offer. The club directors are also able to accept or reject transfer offers after the details are finalized.

By implementing this application, we aim to establish an online platform for football fans to engage with their favorite clubs and follow the league as conveniently as possible. Furthermore, we also want to give the club directors and agents a universal application in which they can better manage their clubs and players. Considering the constantly changing and event-filled nature of a football league, the information needs to be updated and stored precisely to eliminate any confusions or inconsistencies that may emerge. The system will keep a constantly updated platform in order to preserve the relevance and accuracy of the league state and provide this information on demand.

To sum up, the Football Database System is meant to be an online platform in which football fans, agents, club directors and players can reach whatever information they desire reliably, as well as performing operations designed specifically for their purposes.

## 2.1. Why Do We Need Database for a Football Data Management System?

A football league contains a vast array of information about the participants of the football events, such as the players and clubs; as well as the staff who do not participate in events such as the club directors and player agents. In addition, data regarding each match played such as the score of the match and the players' performance for each match needs to be maintained alongside the current standing of the teams inside the league. Moreover, actions such as the transfer of a player from one team to another need to be regulated and the information about the current clubs of the players should be updated in order to avoid inconsistency or confusion. Such a huge pile of data would be exceptionally hard to manage without an online and automated database system. Thus, by using a database system, not only do we easily store the information needed to represent the football league accurately, we also provide the means to regulate the various actions that the users may perform.

## 2.2. How Do We Use Database as a Part of the Project?

The database is going to provide the means to manage all data related to the football league. We will use the database system in order to search for the relevant information according to the user's demands by way of queries. We will also update the database based on the different events in the league (matches, injuries, transfers etc.) by creating new data entries or updating the current ones. The database will provide information about past transfers, injuries and values of the players so that the club directors and agents can make plans regarding the future of their club and players. In addition to the information storing functionality, we will also use the database triggers to relate different elements to each other in order to provide a fluid and functioning data system as well as regulating the different actions the users (club directors, agents, players, fans) want to perform using the database system's mechanics.

# 3. REQUIREMENTS

## 3.1. Functional Requirements

Our Football Database System supports 5 main end-user types: Football Fans, Organizer, Club Director, Team Coach and Agent. All of these user types have to authenticate themselves to use the provided functionalities of each type.

### 3.1.1. Football Fan

- Football fans have the least authorization among the other user types.
- Football fans should be able to select their favorite team and players.
- Football fans should be able to get notifications about their favorite team and players.
- Football fans should be able to view the player profiles, previous player contracts, player transfer list and injuries of players.
- Football fans should be able to view event information (leagues and cups), standings of leagues and cups.
- Football fans should be able to view most of the archive information about football.

### 3.1.2. Organizer

- Organizers represent the associations or confederations like TFF or UEFA.
- Organizers should be able to create new events that are connected to their association or confederation.
- Organizers have all the authorizations of the Football Fans.

### 3.1.3. Club Director

- Club Directors are the team managers who make decisions about the team and players.
- Club Directors should be able to put the players into the transfer list with setting the value of them.
- Club Directors should be able to offer transfer for players from other teams.
- Club Directors should be able to offer contract extension to his players.
- Club Directors should be able to reject transfer offers that are coming from other teams.
- Club Directors should be able to dismiss the team coach and assign the new one.
- Club Directors should be able to view offer list related with his team's players.
- Club Directors have all the authorizations of the Football Fans.

### 3.1.4. Team Coach

- Team Coaches arrange the team tactics and deal with players.
- Team Coaches should be able to select team captains.
- Team Coaches should be able to arrange the formation tactics.
- Team Coaches should be able to change the positions of the players.
- Team Coaches have all the authorizations of the Football Fans.

### 3.1.5. Agent

- Agents are the personal managers of players.
- Agents should be able to accept or reject the offers that come from the teams.
- Agents should be able to view offers related with the players that they manage.
- Agents have all the authorizations of the Football Fans.

### 3.1.6. System Requirements

- The System should be able to prevent offers which exceed the annual wage budget of the club.
- The System should be able to prevent offers which exceed the transfer budget of the club.

- The System should be able to put the players into the transfer list when their contract expires.
- The System should be able to archive an offer when it is accepted by both club directors and agent.

## 3.2. Non-Functional Requirements

### 3.2.1. Authentication & Security

- Access permissions may only be changed by the system administrator.
- Each type of user can login but can access to different levels, therefore the permissions and limitations of the actions of the user should be specified.
- There should be password requirements for security such as length, etc.

### 3.2.2. User-Friendliness

- The system should be user friendly, everything in the system should be clear for the user to use them.

### 3.2.3. Quick Response Time

- The system should be as fast as possible. This is related with loading, browser refresh time and etc. There is a big amount of data which grows by time and since there might be multiple user requests and interactions with the system, the system itself, should be designed in such a way that it prevents long waiting times and have faster responses.

### 3.2.4. Accurate Data Distribution

- During the actions and transactions, no data should be lost. Most of the system components are designed in such a way that they are dependent to each other so it should not allow data losses.

#### 3.2.5. Reliability

- The system should not fail. It should continue to perform its required functions under stated conditions. The mean time between failures should be as large as possible and if failure occurs, the mean time to recovery should be small as possible.

#### 3.2.6. Capacity

- Since, this system is a database system, it needs to store very big amount of data due to the number of teams, players, leagues, and seasons.

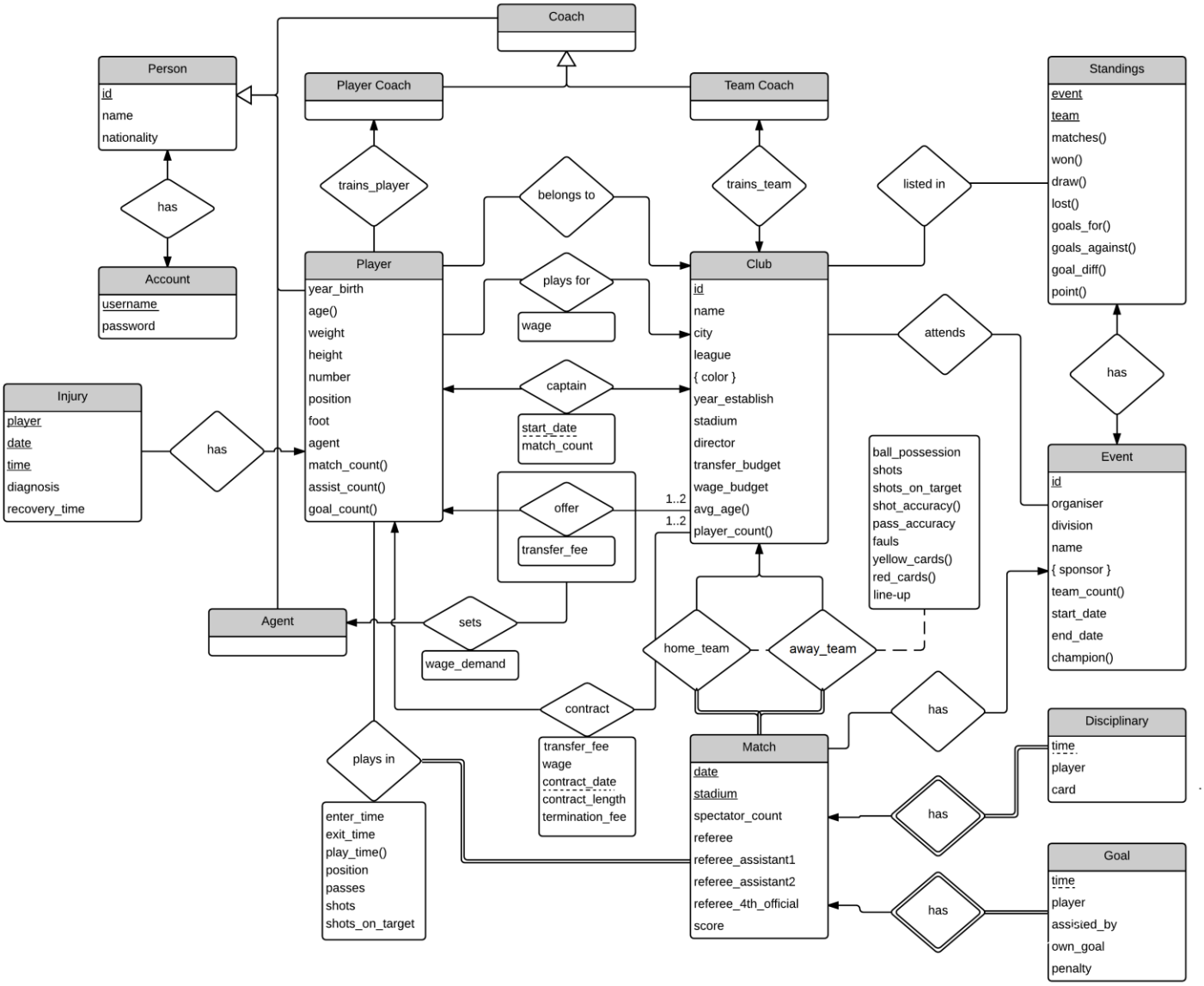
### 3.3. Pseudo Requirements (Constraints)

- MySQL will be used for the database.
- HTML, CSS, JavaScript, JQuery, Bootstrap, Google Material Design Lite and AJAX will be used for the front-end development of the website.
- PHP will be used for the back-end development of the website.

## 4. LIMITATIONS

- Organizers can only organize events that are connected to their organizations, e.g. TFF manager cannot organize UEFA Cup.
- Termination fee of a contract cannot exceed the transfer fee of the player.
- A club cannot participate in two different leagues at the same time; however, it can participate in a cup along with the league.
- A player cannot be shown more than two yellow cards or more than one red card in a match.
- Team captain cannot be from another team.
- A club cannot transfer a player whose transfer fee exceeds its transfer budget.
- A club cannot transfer a player whose wage demand exceeds its annual wage budget.

## 5. ENTITY RELATIONSHIP DIAGRAM




The relationships between Club and Player are to accommodate the fact that a player could be transferred from one team to another permanently, but also a club can rent a player for some duration from another team without paying a transfer fee but only paying a wage to the rented player. Therefore the team a player belongs to and a team a player plays for can be different. The aggregation enclosing the "offer" relationship is drawn intentionally smaller than needed for the sake of simplicity and readability.

## 6. CONCLUSION

The Football Database System is a web-based application for managing and observing a football league, designed to be used for football fans, teams, players, coaches and it

accurately shows the statistics and handles the transfers within clubs and free agent players.

In this report, we described the aim, the information on project and explained the importance of using database management system (DMBS) as part of the project. After the description of the project, we divided the requirements into 3 sub-groups: Functional Requirements, Nonfunctional Requirements, Pseudo Requirements. We tried to clarify the requirements for each user. Then before finalizing the report we provided the limitations of the system.

At the last part of the project, we provided an E/R diagram to show our database design.

## 7. WEBSITE

Our project information website link:

https://bugrafelekoglu.github.io/footballDb/